PROGRESS

Official Publication of
SPECIAL TOOL, DIE AND MACHINE SHOP INDUSTRY

Volume II | APRIL, 1936 | No. 2

Contents

Summarizing Sintered Carbides

By FRANK W. CURTIS
Manager, Firthite Division
Firth-Sterling Steel Company

"Better Machine Tools for the Toolmaker"

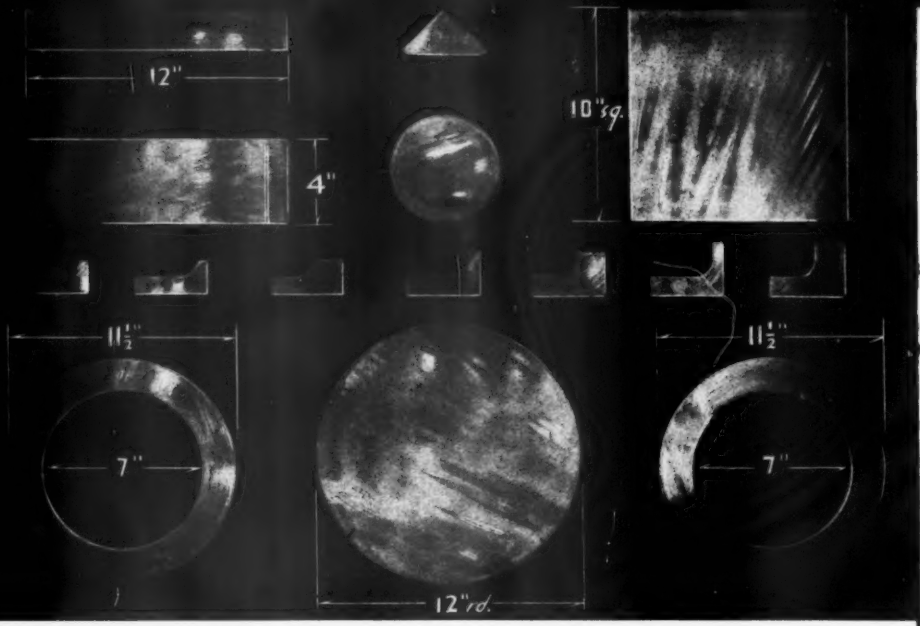
By FREDERICK S. BLACKALL, JR.
President, Taft-Peirce Manufacturing Co.
Installment II

TDM Shops of Cleveland Serve Many Different Industries

By E. P. HAHN, Secretary
Northern Ohio Division
Special Tool, Die & Machine Shop Institute

TOOLS DIES MACHINES
GAUGES JIGS
FIXTURES

General Machine Shop Practice Specialties & Production



These sizes in **Oil and Water Hardening**

TOOL STEEL

are carried in our Warehouse stocks for your convenience, together with complete range of smaller sizes, down to ¼" thicknesses. We can make immediate delivery in the Cleveland district and over-night service to any other point in this territory. . . . *We solicit your inquiries.*

THE PENINSULAR STEEL COMPANY

Walter O. Kurtz, *Sec'y-Treas.*

CLEVELAND: 1470 Lakeside Ave. -:- CHerry 7173

DAYTON: 905 East 3rd St. Adams 3121

DETROIT: 1030-36 McDougall Ave. Fitzroy 5496

TOLEDO: 1915 Spielbusch Ave Main 5171

Chicago Representative
WM. N. PHARES
1 No. Crawford Ave. - Van Buren 4556

Akron Representative
JAMES A. SHATTUCK
42 East South St. - Hemlock 2193

Summarizing Sintered Carbides

By Frank W. Curtis

Manager, Firthite Division, Firth-Sterling Steel Company

FROM a metallurgical point of view, the use and application of the hard metals which include tungsten, tantalum and titanium compositions, and of which Firthite sintered carbides are outstanding members, have made remarkable strides in the field of metal cutting. Manufacturing executives, who are interested in costs, have more than a general interest in these materials because where competition prevails, the margin of profit is lessened and the cutting of manufacturing costs becomes an important consideration. In this direction, Firthite finds its most outstanding use—the lessening of costs through increased output per machine per man.

When an analysis is made of the many economies made possible by the use of carbides, it is no wonder that their use becomes broader in nature at a rather constant pace. Operations which might have been on the outskirts of possibility but a short time ago are now entirely practical because of a constant advancement in four directions. First, sintered carbides have been improved in qualities that result in better cutting performance, second, machine tool builders have developed and marketed machinery basically designed for carbide operation, and third, the user has made a very careful study of carbide possibilities so that the greatest gains can be recorded, and fourth, qualified contract tool, die and machine manufacturers have been appointed agents and have installed the special equipment necessary for prompt and correct manufacture and service.

This progress started when carbides were first introduced, but unfortunately was retarded during several years of abnormal conditions. With business constantly improving, however, Firthite has become a very important tool of industry and its wider use obviously will spread to plants where its application is limited at the present time.

Outline of Advantages

To briefly review the advantages offered in metal cutting through the application of carbides will quickly show why their use is being seriously considered by so many plants. The qualities of sintered carbides, so different than other cutting materials, permit gains in many directions, other than straight reductions in cutting time as may be seen in the following summary:

Faster Cutting. The best known qualities of sintered carbide are its hardness and resistance to abrasive wear. The harder the cutting material the longer it will stand up under use. If the hardness is unaffected by heat then cutting can be handled faster. Having these qualifications means that higher speeds and faster feeds can be applied with carbide tools and the gain, naturally, is more output.

Longer Tool Life. A material that will resist wear means that longer tool life can be expected. Down-times due to tool changes are expensive and, of course, increase tool maintenance. With carbides, wear does not take place as fast as with other materials, even though the rate of cutting is increased, and the overall gain results in less tool cost.

Reduction in Depth of Cut. The average scale of a casting or forging has very little effect on carbide tools as compared to other cutting materials and the usual allowance required to "get under the scale" can very often be reduced. On some parts the amount of material to be removed can be cut in half. This results in a very substantial saving in materials cost.

Smoother Finish. Due to the use of higher cutting speeds it is possible to obtain an unusually smooth finish with carbide tools. It is much like a blanking punch and die. If a slow travel were used the material would be roughly torn but at a high rate of travel a clean cut is made possible. The keen sharp edge of a carbide tool stands up exceptionally well and makes it possible to machine extremely smooth surfaces, which results in a better product.

Greater Accuracy. Even though carbide tools remove metal faster, accuracy is not sacrificed but on the other hand is improved. This is due to a better cutting action obtained at higher speeds and because the cutting pressure or strain is reduced. Then, too, since carbides resist wear, accuracy can be maintained for a longer period of time. The usual gain derived from accuracy is less fitting at assembly.

Minimum Distortion. Thin, frail parts that so often are likely to cause difficulties in machining by going out of shape, can usually be machined with carbide tools with very little trouble because at higher cutting speeds and with usually a slight reduction in feed per revolution the pressure of cutting is greatly reduced so that cutting strains are overcome. This results in more uniformity and the maintenance of closer tolerances.

Combining of Cuts. Largely due to the free-cutting action of carbides, when operated at higher speeds, it is often possible to combine roughing and finishing cuts into one. Quite often grinding operations are even eliminated. Very often a surface can be machined smoother in one cut with a carbide tool than with other materials using two or more cuts, such as the face milling of a grey-iron casting. The result of this economy is reduced manufacturing costs.

Chipping of Edges Eliminated. A very troublesome condition which is overcome by carbide tools is the chipping or breaking away of edges, especially of castings. Chipping is usually due to slow cutting speeds, but with carbides, cutting at higher speeds, the tool strain is reduced and clean-cut edges are an easy undertaking. This advantage results in less rejection at inspection.

Reduction in Heat. When metals are cut at high speeds the generation of heat to the surface of the work is greatly reduced. Much of the heat is dissipated through the chips and in some cases the temperature of the work changes but a very small amount. The result is less warpage, another economy that is important in many cases.

Harder Materials Now Machinable. Hard materials that usually offer machining difficulties can now be cut with sintered carbides because of their unusual hardness and ability to hold up under adverse conditions beyond the breakdown point of other cutting tools. This feature opens the way for new possibilities.

Development of New Materials

Metallurgists have been able to produce alloys of a lighter and tougher structure with certain outstanding characteristics of a desired nature, but many of these developments had been held up because of the difficult machining problems they presented. Silicon aluminum, for example, was preferred for aircraft pistons because of its low co-efficient of expansion, and light weight but until tungsten carbides were introduced machining was next to impossible.

Many other new and better alloys will be developed from time to time, and in fact are at present, for the express purpose of reducing costs through less weight or for improving the value of a given product through increased strength because it is now known that the super-cutting properties of sintered carbides will permit machining.

Certain Procedures Necessary

To get the most out of Firthite sintered carbides means that certain procedures must be observed. Unfortunately basic rules are sometimes overlooked and results fall short of their goal, but when this occurs it usually prompts management to find the cause and make necessary corrections. Carbides are different, vastly so for that matter, than other cutting materials which means that different conditions must be provided for. Take hardness for example, the best known quality of Firthite, which ranks close to the diamond, our hardest known substance. Now then, hardness in a tool, is a splendid asset and, in fact, is imperative. Yet with extreme hardness we are apt to experience brittleness, so right here is a quality we must cater to. The solution is simple— rigidity. Use bigger tools and provide adequate support, reducing overhang as much as possible.

The inherent hardness of sintered carbides permits the use of higher

(*Continued on page 14*)

"Better Machine Tools for the Toolmaker"*

By Frederick S. Blackall, Jr.

President, Special Tool, Die & Machine Shop Institute

INSTALLMENT II

In the field of grinding, reference has already been made in this article to the recent trend toward simplification of light surface grinders through elimination of needless power traverse features. Fig. 7 (Abrasive Machine Tool Co. hand-operated grinder) illustrates a hand-operated surface grinder of this character—a particularly useful tool for delicate grinding operations on small and medium size work. While reversion to hand-operated machines may seem like a step backward, in reality this is not the case. It is simply a recognition of the distinction which exists between operations which are essentially manual and those, such as roughing out operations, which are amenable to power application. In the latter field, the high-speed surface grinder of the type pictured in Fig. 8 (Norton Co. 10 x 12 x 24 in. equipped with Taft-Peirce magnetic chuck) is typical, operating at a maximum table speed of 100 ft. per min. and capable of producing work to a flatness tolerance of 0.0005 in. or less.

Cylindrical grinders and profile grinders have been given greater smoothness of operation with resultant freedom from chatter and improvement in grinding finish through the introduction of preloaded spindles, ball and roller bearings, and higher spindle speeds. The commercial development of the thread grinder, now in its infancy, adds a new and interesting tool, allied to the cylindrical grinder, which will find useful application in many tool rooms. The next five years will witness a wide-spread adoption of this type of machine which has been in common use in Europe for some time past.

The hydraulic shaper-planer of the type illustrated in Fig. 10 (Mfd. by Rockford Machine Tool Co.) is a tool still too infrequently employed in the tool room. This machine will operate at speeds as high as 90 ft. per min., obtained through hydraulic drive which has now been perfected to the point where it is reasonably trouble proof. When cutting speeds and feeds on lathes and similar machines are considered, planer speeds would appear to be hopelessly out of date. This writer believes that planer design is, as a matter of fact, about to enter a period of unprecedented development. Why should we not envision the day when table speeds of 250 ft. per min. will be commonplace in the planer field? And why shouldn't they be? The only serious obstacles which would seem to be presented are the limitations of holding the work and the inertia of a heavy table. The first obstacle is certainly not insurmountable and the solution of the second may lie in the field of lighter alloys of aluminum and magnesium whose strength exceeds that of cast iron while many times lighter. It is understood, in fact, that certain planer builders are about ready to announce high speed machines approximating such speeds; their application to tool room work should be especially practicable.

Boring Machines With High-Speed Spindles

The chief development in jig borer and boring machine design during the depression years has been the addition of high-speed spindles, a most desirable move, which will reduce much of the wear and tear on spindles used in boring small holes in large work. Accessories, such as rotary tables, boring heads, etc., have been re-designed to permit greater accuracy of setting, thus adding to the usefulness of this type of equipment.

A number of notable specialties which find their major application in the tool room may be mentioned. The high-speed die filing machine — flexible, well-nigh universal, and simple to operate—was formerly available only in an imported machine. Today excellent American machines filling this much wanted need are available, some of them capable of both filing and sawing. A typical machine of this class is pictured in Fig. 13 (Mfd. by Oliver Instrument Co.).

(*Continued on page 17*)

*Reprinted by permission of *Iron Age*.

TDM Shops of Cleveland

Serve Many Different Industries

By E. P. Hahn, Secretary
Northern Ohio Division
Special Tool, Die & Machine Shop Institute

"Cleveland's chief fame, as a city of commerce, lies in her diversification."

The Federal Industrial census lists about 300 distinct industries in the United States. Of these Cleveland has 218.

Cleveland's manufacturing establishments number about 2500 and their products include most of the census list from automobiles to zippers.

This unusual diversification of products has placed extraordinary responsibilities upon the manufacturers of the specially designed tools, dies and machines which are needed in most industries. It accounts for the development of the shops of the NORTHERN OHIO DIVISION of the SPECIAL TOOL, DIE AND MACHINE SHOP INSTITUTE.

Here is a group of "skilled worker" shops whose personnel has been trained and whose equipment has been developed, not to the circumscribed requirements of a few industries but to the divergent needs of a hundred different industries. Blue prints, specifications and inquiries come to these Cleveland shops from distant points because of this breadth of experience. Engineers, craftsmen and, above all, managements, think in the broad terms of solving intricate production problems.

Cleveland is indebted also to her naturally strategic position for much of her great volume of manufacturing. In an article written by the Industrial Commissioner of Cleveland we find these facts:

"Within five hundred miles of Cleveland is found 55 per cent of the population of the United States and Canada and 135,000 of the nation's 191,000 industries. Within this circle $33,000,000,000 worth of the country's finished products are made.

Of the eighty-one principal market centers of the United States, forty-seven are within five hundred miles of Cleveland, and of the 261 cities of 30,000 population or more, 160 are within this area.

The city's domain, by right of convenience and proximity, stretches afar. It includes all or portions of twenty-five states in which is concentrated much of the nation's buying power. There is nothing illogical in the fact that manufacturers are choosing Cleveland as a center for marketing and distribution."

Cleveland is indeed a neighbor to many of the cities which have developed the world's greatest industries: Pittsburgh, "City of Steel"; Akron, "City of Rubber"; Detroit, "City of Automobiles." For all of them the TDM shops of Cleveland manufacture the highly specialized tools, dies, jigs, fixtures and machines which solve their production problems.

A few hours by train or automobile, *minutes by air*, there is no appreciable delay in the exchange of prices and instructions. The farthest important industrial area is within reach of overnight truck delivery while the smaller, but equally important, industrial cities are really next door neighbors.

Among these are Youngstown with its steel and rubber and lamp manufacturers; Canton with its automobile bearings, safes, furniture and diversified metal products plants; Toledo, producer of automobile spark plugs and other electrical equipment, glass and glass making machines. To all of them the contract TOOL, DIE AND MACHINE SHOPS of Cleveland render important service.

For many months, this group of Cleveland shops has been buying new equipment. Numerous purchases were made at the National Machine Tool Show held in Cleveland last September. Modern grinders, high speed milling machines, the newest boring mills, larger planers have been installed. Several plants have been enlarged and modernized, heat treat-

ing equipment has been added. Modernization is the order of the day.

Not to be passed by, is the fact that several of these Cleveland shops include in their equipment the highly efficient Swiss jig-boring machine made by the Societe Genevoise d'Instruments de Physique.

There is another distinct and highly important advantage which is enjoyed by the TDM shops of Cleveland, and it is an advantage which redounds to the benefit of their customers. Cleveland's strategic location as one of the country's most important centers of industrial activity has resulted in the establishment of mills, foundries and manufacturing plants which supply practically every raw material which enters into the making of tools, dies and machinery. If an accessory is not actually made in the City the manufacturer has built a warehouse and carries a stock in Cleveland, and even if a special product is specified then the time required to obtain it is negligible because Cleveland is close to everything.

Patterns, castings, forgings, machine steels, tool steels — all are available without delay.

For the convenience of buyers of tool, die and machine shop products, a list of the Northern Ohio Division of the Industry is appended hereto.

It will be noted that some shops manufacture a so-called general line while others specialize; some are die and fixture makers, having the facilities for handling and trying-out heavy equipment, while others are specialists in the design and development of high precision and intricate progressive types.

Fine small tools and precision gauges are the products of some shops and the new "carbide tipped tools" are included by others.

Special machinery of the most advanced types has been designed and built by these Cleveland shops.

Several shops make specialties which are nationally-known products. From every angle these shops of the Northern Ohio Division are qualified to serve other industries, to help them solve their production problems.

Directory of Special Tool, Die and Machine Manufacturers of Cleveland

BARTH STAMPING AND MACHINE WORKS

3815 West 34th St. SHadyside 1857

G. A. BARTH, M.E. T. A. BARTH, Sales
J. J. BARTH, Mgr. J. A. BARTH, Supt.

DIE AND STAMPING ENGINEERS
Precision Tools, Dies, Jigs
SPECIAL MACHINERY

CLEVELAND UNIVERSAL JIG CO.

13404 St. Clair Ave. MUlberry 3322
Designers and Builders
Jigs, Fixtures and Special Machines
Complete Plant Routing and Tooling
Production Engineering

THE BUNELL MACHINE & TOOL CO.

1600 East 24th St. PRospect 2681

Designers and Manufacturers
Tools, Gauges, Jigs, Dies
Special Machinery

THE DICKEY-GRABLER CO.

10302 Madison Ave. N. W. WOodbine 4172

Metal Stampings
Marking Devices
Dies

Directory of Special Tool, Die and

HAHN MANUFACTURING CO.

5332 Hamilton Ave. ENdicott 2205

E. P. HAHN, Pres. M. W. HART, Supt.

Dies, Tools, Fixtures

Special Machines

EQUIPPED FOR MEDIUM AND HEAVY TYPE WORK

H & P MFG. COMPANY

1635 East 55th St. HEnderson 4218

DESIGNERS AND BUILDERS

Dies and Tools

Stampings

General Machine Work

THE INDUSTRIAL MACHINE COMPANY

Founded in 1903

1436 East 47th Street

HARLEY L. FREEMAN, *Pres.* L. H. FREEMAN, *Secy-Treas.*

Builders of Special Machinery

General Machine Work

KINZIG TOOL COMPANY

1243 West 3d St. MAin 6339

C. H. KINZIG, *Mgr.*

Tools, Dies, Special Machinery

Specializing in Welded Constructed Tools

LYONS MACHINE COMPANY

5601 Tillman Ave. WOodbine 2440-2441

JOS. H. LYONS, *Pres.* JACK L. LYONS, *M.E.*

Manufacturers Special Machinery

Tools, Jigs, Fixtures

Firthite Sintered Carbide Tools

SWISS JIG BORING

THE McKINNEY TOOL & MFG. CO.

1688 Arabella Rd. KEnmore 1681

Roller Die Forming Machines

Automatic Saw and Shear Cut-off Machines

DIE CASTING MACHINES

Special Machinery

Dies, Jigs and Fixtures

THE MAURICE MEYER CO.

1934 St. Clair Ave. PRos. 0849-0850

DESIGNERS AND BUILDERS

Jigs and Fixtures

Special Machinery

Experimental and Model Work

MODERN TOOL & DIE CO.

1051 Power Ave. CHerry 7440

Whitney Power Bldg.

DESIGNERS AND BUILDERS

Tools and Dies for Production

Special Machinery

Stampings

OHIO TOOL COMPANY

3160 West 106th St. CLearwater 3200

L. E. Butzman, *Prop.* E. Heller, *Tool Eng.* B.M. Rounds, *Supt.*

DESIGNERS AND BUILDERS

Tools, Dies, Jigs, Fixtures

Special Machinery

THE PARAMOUNT TOOL CO.

1392-98 East 43d St. ENdicott 2220

F. A. SCHMALZ E. H. SCHMALZ

Jigs, Fixtures, Dies

Experimental Work

Machine Manufacturers of Cleveland

THE PHOENIX ICE MACHINE CO.

2711 Church Ave. CHerry 1048

F. W. SEBELIN H. E. BOLLINGER

General Machine Work

Designers and Builders of Special Machinery

WM. PLOTZ MACHINE & FORGE CO.

1417 St. Clair N.E. PRospect 0441

OSCAR A. PLOTZ GEORGE T. PLOTZ

General Machine Work

Special Machinery and Parts

Forgings of All Kinds

PROGRESSIVE MACHINE & TOOL CO.

109 Fountain Court MAin 3171

A. J. ORINSKI

Jigs, Fixtures

Special Machinery

A. P. SCHRANER COMPANY

3338 Payne Ave. HEnderson 8644

WALTER F. EGGER, *Supt.*

External Cylindrical Tapping Machines, Special Machinery

Tools, Dies, Jigs, Fixtures

THE SOMMER & ADAMS COMPANY

18511 Euclid Ave. KEnmore 0810-0811

Since 1907

DESIGNERS AND BUILDERS

Special Machinery

Tools, Jigs and Fixtures

Star Machine & Tool Co.

Established 1903

9320 Woodland Ave. GArfield 2060

J. C. SCHURGER

Designers and Builders

SMALL AND LARGE

Dies, Jigs, Fixtures, Gauges

Precision Production Machine Work

Small and Medium Stampings

TOOLS & GAGES, Inc.

3106 East 63d St. MIchigan 7230

W. L. WARRANDER J. A. SALZER

"Let us be your tool room."

DESIGNERS AND BUILDERS

Tools, Gages, Dies, Jigs Fixtures, Special Machinery

The Trundle Engineering Co.

1501 Euclid Avenue MAin 0250

ENGINEERS

Designers and Builders

Special Machinery, Tools and Fixtures and Products

Research and Testing of Products

Development and Inventions

THE J. C. ULMER COMPANY

1791 East 38th St. HEnderson 4601

J. J. FEDERKIEL, *Mgr.* R. KIFFER, *Supt.*

Tools, Dies, Jigs, Fixtures

Special Machinery

DESIGNING AND BUILDING

Experimental, Model, Punch Press and Screw Machine Work

THE VARIETY MACHINE & STAMPING CO.

4383 West 35th St. SHadyside 4422-4423

O. KERNSPECHT, *Pres.* J. SVEC, *Supt.*

DESIGNERS AND MANUFACTURERS

Dies and Metal Stampings

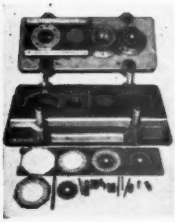
We are equipped to make dies and stampings in production up to 250 tons capacity.

LOOKING FOR THE NEEDLE IN THE HAYSTACK . . . . .

is just about as
a job as trying
without using D

DANLY DIE SETS SAVE YOU MONEY

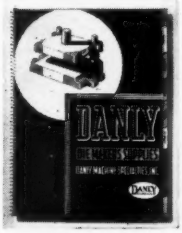
DANLY QUALITY



● Danly Die Sets are more accurate — give more accurate parts — and greater production per die before re-grinding.

A typical example of Danly's long-lived accuracy is furnished by this four-stage progressive die producing one stator and one rotor blank at each stroke of the press. It has furnished 4,629,200 of them at the end of the 27th regrind. An average of 171,452 of both stator and rotor blanks per grind.

DANLY CATALOGING



DANLY DIE SETS AND D

out as hard
rying to cut die set costs
sing DANLY DIE SETS

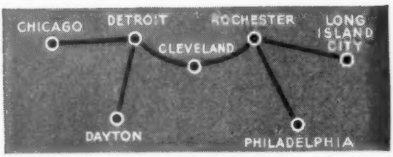
EY IN THREE WAYS

LY
GING

● From Danly's unlimited number of possible combinations of die set size, thickness and material of shoe and punch holder, bushings and length of pin—you select the die set ideally suited to the job in hand—*faster*—because the new Danly Catalog is easier to use and more complete than any other listing of its type.

Write the Danly Branch Plant nearest you for your copy of this great new catalog and full details on its most profitable use.

DANLY DISTRIBUTION



● *Faster* delivery of *better* die sets at lower final costs is offered the manufacturers in each of these 7 districts by the unique Danly Distribution Plan. Danly maintains a complete stock—and an assembly plant—at each of these strategically located points. Each one is equipped to meet any die set requirement—TO SHIP WITHIN 24 HOURS—an unlimited number of possible combinations of Danly Standard Die Sets.

❖

Danly Machine Specialties, Inc.
2121 S. 52nd Ave., Chicago, Ill.

BRANCHES:

Detroit, Mich.....1549 Temple Avenue
Long Island City, N. Y.....36-12 34th Street
Cleveland, Ohio.....1444 E. 49th Street
Dayton, Ohio.....114-116 N. St. Clair Street
Rochester, N. Y.....16 Commercial St.
Philadelphia, Pa.....3913 N. Broad St.

DIE MAKERS' SUPPLIES

INDUSTRY
PROGRESS
Published in the interests of the
SPECIAL TOOL, DIE AND MACHINE SHOP INDUSTRY
3500 Members in the U.S.A.

Please send contributions to
GEORGE J. HUEBNER, *Secretary*
Special Tool, Die and Machine Shop Institute
P. O. Box 3561, Cleveland, Ohio

Vol. II, No. 2 April, 1936

Publicity for the Industry

WHILE a campaign of publicity for the entire industry was not authorized at the recent meeting of Trustees and Members, a majority of those present recognized its possibilities. Seeing in PROGRESS a medium through which much could be accomplished, the Secretary was instructed to make arrangements for its continued publication.

The pages of Industry PROGRESS provide opportunity for publicizing the products and activities of our Industry. Secretaries of the local groups are invited to send news about their members and any items which are interesting.

Articles from members of the Industry are particularly welcome. New inventions, new products, new machines are always of interest and descriptions and illustrations will be accorded available space.

The privilege of advertising in PROGRESS *is open to every individual member of the Industry as well as any group of shops or divisions of Industry members.*

As PROGRESS develops it can become of ever increasing value to the Industry as the means for promoting the sale of its products and services.

PROGRESS

NORMALLY, the circulation of our publication is 3500—all members of our own Industry.

This month, however, several things have happened which have made possible the expansion of this issue to more than 5000 copies.

These extra copies are being mailed to a selected list of buyers and users of tools, dies, jigs, fixtures, gauges and special machines of all kinds. Being manufacturers of all sorts of products many of them have their own toolrooms, all of them have their production problems.

The TDM members of Cleveland have had several plans under consideration for publicizing and expanding their businesses. Among those proposed and investigated was an exhibit at the Great Lakes Exposition to be held in Cleveland during the Summer. This however promised to be too expensive.

A series of advertisements in PROGRESS, the Industry's publication, was decided upon as the most logical and inexpensive plan. As a result, in another portion of this issue will be found the paid advertisement of the Cleveland shops which are participating. It takes the form of an article by Secretary E. P. Hahn and a directory of the members and this April issue of PROGRESS is being mailed to a selected list furnished by the members themselves and checked for duplicates by the PROGRESS editor.

INSTITUTE DUES REDUCED TO $10.00

The Trustees of the Special Tool, Die & Machine Shop Institute have reduced dues for the period April 1-December 31, 1936 to $10.00.

Although announced only this month the response from Industry members has been very gratifying.

This nominal sum should assure the Institute having a large membership.

News from TDM Industry Divisions

New Officers in Detroit

AT their annual meeting the members of the Automotive Tool & Die Manufacturers Association elected three new directors to replace those whose terms had expired. They are Phil Huber, Vice-President of Ex-Cell-O Aircraft and Tool Corporation; H. D. Kiefer, President of The Interstate Tool Company and E. W. LaMonte, Vice-President of Schwartz Tool Products Company.

Subsequently Messrs. Barker and LaMonte were elected President and Vice-President respectively, while Bon J. Purcell, Secretary-Treasurer of Garman Tool & Die Company was re-elected Treasurer of the Association.

Chester A. Cahn, the newly elected Secretary, is a newcomer to the Industry. He brings to the Detroit group valuable experience acquired as a practicing lawyer, including a term as referee in Traffic Court.

Cleveland Group Re-Elects Officers

The successful administration of the affairs of the Northern Ohio Division for the preceding year brought honor and re-election to the officers.

Jos. L. Lyons, President of the Lyons Machine Company and E. P. Hahn, President of the Hahn Manufacturing Company were prevailed upon to serve another year as President and Secretary-Treasurer respectively, while H. E. Bollinger, Treasurer of the Phoenix Ice Machine Company was elected Vice-President.

A noteworthy action recently taken by the Cleveland group is a cooperative campaign of publicizing the skill and facilities of their shops.

Washington State Manufacturers Organize

From Seattle comes word of the formation of Washington Metal Trades, Inc., with C. F. Ramsey as Secretary.

Already it is evident that the season will be a busy one for the plants of the Pacific North-west.

The new organization will operate along trade association lines, one of its principal purposes being the study of employee relations.

The TDM Industry extends greetings and best wishes.

THE CONTINENTAL DO-ALL sawing and filing machine can now be bought on easy credit terms, the official Commercial Credit Co. plan requiring only a small immediate payment. The interest cost is only slightly more than 6%.

The Do-All is a continuous cutting and sawing type. One of its unique features is a built-in automatic saw-brazing machine, which contains a saw-lap grinding device driven by a separate ¼ hp. motor, and a welding transformer.

Free demonstration of the machine may now be had from representatives in New York City, Chicago, Cincinnati, Buffalo, San Francisco and Los Angeles.

Mauser Toolmaker's Caliper *with micrometer adjustment.*

A masterpiece of fine toolmaking. . . . Guaranteed accurate measurements to .001".

This and other types, with or without height gauge attachment, also knife-edge straight edges with insulation holder, can be furnished promptly from stock at attractive prices.

Write for our free 12-page catalog today.

GEORGE SCHERR COMPANY
128 B Lafayette St., New York, N. Y.

(*Continued from page 4*)

speeds—far greater than ever before. Faster cutting means more power and since practically all the power is taken at the cutting edge of the tool, the entire tool should be proportionately larger. From this, it is obvious that following traditional practice is not the correct course—it is a case of originating necessary requirements that will net the best results. With a solid, heavy tool, possibilities are almost unlimited but with vibration, the greatest foe of sintered carbide, or lack of strength where it is necessary merely means that performance will not attain peak proportions. The greater the deviation from good practice, the greater performance will suffer. Summed up the other way, the more attention paid to rigidity, strength and support, the better will be the results.

The reason why emphasis is stressed on basic rules for application is in view of the general structure and character of sintered carbide. It is made from extremely fine tungsten carbide powder of high purity. Powdered metallic cobalt is added, the mixture is ball milled, and a required amount is then pressed in a mold to form a blank of desired shape. The final operation is that of sintering in a hydrogen atmosphere which produces the tungsten carbide blank ready for use. It will be seen that it is not like steel in any sense, it cannot be forged and it has no temper. Its density is far greater than steel, its coefficient of expansion is about half of Invar, the least expansive steel known, and its compression strength is greater than any known material.

Machine Tool Development

Perhaps the largest market affected by the introduction of sintered carbides is the machine-tool industry. Already there have been a number of marked improvements in the design of machinery and many manufacturers have developed special units suited to carbide tools. The outstanding improvements have been increased spindle speeds, increased feeds and much more rigidity and strength than has heretofore been attempted. Considering the obsolescence brought about through the introduction of tungsten carbide, there is a market at the present time for many millions of dollars worth of machinery. The obsolescence of present machines is reached when they fail to earn the income that can be obtained with newer machines. It is not to be expected, however, that the change will be made over night. Replacement will be gradual—the newer machines crowding out older equipment, according to production demands.

Although the ideal application of Firthite is achieved by the use of a machine developed primarily for its use, it is quite reasonable to expect economical applications from machines already in use. The results with older machines will not be as satisfactory as those obtainable with new machines, but there will be economical advantages that will make the application of sintered carbides profitable. There are two distinct economies to gain through sintered carbides, one is greater production, the other is increased tool life. Older machines have a greater tendency to increase tool life and in some cases offer a slightly greater output, whereas the newer machines offer an unusual increase in output as well as tool life.

Summarizing these remarks show that sintered carbide is a much needed weapon in industry due to its ability to cut manufacturing costs, that it also offers many other indirect savings from a standpoint of economy, that like any new or different development it is necessary to follow certain procedures which are not more difficult but just different, that to get the most out of it in the form of results requires a knowledge of its characteristics, that its field of application is constantly broadening and that new machinery is rapidly being developed for its correct application.

Tungsten, tantalum and titanium carbides have a very definite place in every metal-working shop and management owes it to itself to find that place so that economical manufacture to combat competition can be effected.

The SHOPS of the Special Tool, Die and Machine Shop Industry are the *tool-rooms* for many members of other industries. Not only do they design, develop and manufacture the tools, dies and special machines needed for the huge tooling programs of industries which must bring out new models periodically but the so-called jobbing machine shop serves regularly such major industries as ship-building, paper making, textile and oil well.

A TDM Contract Shop, with its customary moderate over-head can usually produce its tool products at prices which show a distinct saving for the large production manufacturer.

The Foley Manufacturing Co. of Minneapolis, Minn., makes two particularly interesting claims for its Die-making Machine:

1. That it is the fastest reciprocating metal cutting saw for tool steel, and
2. That the tilting of both table and ram make machine clearings in corners possible with one setting.

The construction which makes this possible is a patented feature permitting any angular change to be made instantly and with the tilting of the ram, cutting at any combination of angles.

A ¼ horsepower motor provides ample power for the heaviest work.

CARTER DIAMOND TOOL CO.

IMPORTERS & CUTTERS

Specializing in Elongated Brazilian and Bortz Diamonds which do not require resetting.

1890 EAST 40th STREET, CLEVELAND, OHIO

Please send blueprints or specifications for special tool requirements

The Geo. H. Porter Steel Treating Co.

Heat Treating — *Carbonizing*

Annealing — *Case Hardening*

TOOL WORK OUR SPECIALTY

1225 Marquette St. Tel. HEnderson 6601

CLEVELAND, OHIO

An Advertisement in

PROGRESS

is a sales message directly to the MEMBERS of an Industry whose activities reach into practically every Metal-working Industry in the country.

Rates are moderate -:- Results have been proven

ADDRESS: George J. Huebner, Secretary
P. O. Box 3561, Cleveland, Ohio.

The CONTINENTAL **DO-ALL**

A 3-IN-ONE NECESSITY

BAND FILING

INTERNAL AND EXTERNAL BAND SAWING

BAND POLISHING

INSTANTLY CHANGE TO ANY ONE OF THE SIX FUNCTIONS

3 MACHINES IN ONE
$790.00
COMPLETE

"BUILT-IN"

- Automatic Electric Saw Brazer
- Infinitely Variable Speed
- Worm Gear Transmission Unit
- Air Pump and Constant Air Jet
- Baffle and Tube to carry chips out the back
- Power Work Feed
- Control Switches
- Pilot Lamp

BENCH MODEL
$375.00
COMPLETE

MODERNIZES AND PAYS ENORMOUS RETURNS

CONTINENTAL MACHINE SPECIALTIES, INC.

1301 So. WASHINGTON
MINNEAPOLIS, MINN.

W. M. Kiplinger, according to his Washington letter, still believes that "Government regulation of industry is actively in" the President's mind. He says it may take the form of compulsory regulation by special commissions.

Better Machine Tools

(Continued from page 5)

The Keller die sinker has been considerably improved in accuracy and convenience, finding its major application of course on die work.

Gas Cutting Machines for Tool Room Work

Much too little used is the oxy-acetylene pantograph cutting machine which is quite indispensable in many tool rooms, especially those concerned with the production of irregular shapes of any sort. Templates, mold bodies, and fixture parts which if produced in quantities would be made from drop forgings can by this means be turned out rapidly from rolled steel plate even of substantial thickness. The modern flame cutting machine can be accurately guided to a master template or drawing and will cut metal to such a sharp line that very little machining has to be done to clean up the rough surfaces left by the flame. Using this device in combination with an electric arc welding machine, the tool maker can effect many short cuts, and eliminate pattern expense, for welded jigs and fixtures are here to stay.

Another roughing out machine which has converted hours and minutes into seconds is the abrasive cut-off machine which will sever a 2-in. bar clean and reasonably square in 15 sec. The conversion of this machine from dry to wet, now standard, assures greatly increased wheel life, smoother and more accurate cuts, and freedom from burning or hardening of the cut-off surface. An interesting feature of this machine is that it will cut hardened steel and tubing even more readily than it will cut soft steel, which has obvious advantages on occasion in the tool room.

It is not within the scope of this article to attempt to enumerate all types of machines which can be or might be used in

(Continued to page 19)

HELLER **NUCUT** FILES

Patent No. 2027039

A distinctly new file made by a company with 100 years experience behind them. Its patented features are a combination of high and low teeth with staggered overcut thus insuring you a faster cutting and smoother finish. Uniformity is guaranteed by heat treatment in special electric furnaces. TRY A FEW AND BE CONVINCED.

DISTRIBUTED BY

THE WHITE TOOL & SUPPLY COMPANY

1317 WEST 6TH ST. MAin 0235 CLEVELAND, OHIO

"Alnor" Indicating Pyrometers

For every requirement

Inexpensive - accurate - durable

For over 15 years "Alnor" pyrometers have been the choice of thousands of both large and small shops everywhere. Because of their lower price and compact size they are extensively used for indicating temperatures of molten lead, babbit, tin and die cast metals, heat treating furnaces, for flue gas temperatures, and similar service. Also other types of portable and wall pyrometers for every requirement.

Write for Information

ILLINOIS TESTING LABORATORIES, Inc.

421 N. La Salle St. Chicago, Illinois

35 Years Experience

$13 to $36 up

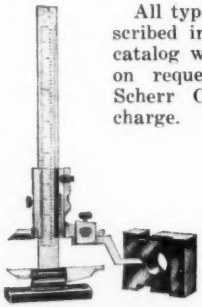
Mauser Precision Tools Spell Accuracy

AMONG the most important tools used by tool and die makers are those which measure and assure ACCURACY —a watchword of the Industry.

It should be of interest, therefore, to all Industry shop executives that a new catalog on Mauser Precision Tools has just been issued by the George Scherr Company, 128 Lafayette Street, New York, N. Y.

In addition to the well known toolmakers' Vernier Calipers in sizes up to twelve inches, this company now furnishes Mauser Knife-Edge Straight Edges in six sizes ranging from three to twelve inches. The novel feature of these straight edges is a holder made of insulation material which insures absolute accuracy, particularly with extensive use of the tool.

Mauser toolmakers' calipers are also available as convertible Height Gauges. An attachment consisting of a substantial lapped base and an adjustable scriber is furnished, the caliper being held in the accurately lapped base by a centering clamp screw. The scriber readily attaches to the upper jaw, and the scriber needle which is of angular design is adjustable in such a way that proper setting of the scriber will result in direct reading of the scale. Verniers are provided for reading in decimals to .001" and in fractions to $\frac{1}{32}$", $\frac{1}{61}$" or even 1/128" respectively.



All types and sizes are described in detail in the new catalog which will be mailed on request by the George Scherr Company, free of charge.

A "HERCULES" Pneumatic Pencil Grinder That is Small, Light and Fast.

Especially designed for use with small emery wheels and pencils, rotary files, etc. Light—high speed—free from vibration—excellent for close quarter work, finishing or touching up dies without removing them from the machine. No. A. 113-3; speed—21,000 R. P. M.; capacity—up to 1½" vitreous and 2" organic bonded emery wheels; weight—3½ lbs.

THE BUCKEYE PORTABLE TOOL CO. DAYTON, OHIO — HERCULES

SUPERIOR PATTERN & MFG. CO.

INCORPORATED

Manufacturers of

Wood and Metal Patterns

Models

and

General Machine Work

3280 EAST WOODBRIDGE STREET AT ADAIR

FITZROY 4050 - 4051 - 4052

DETROIT MICHIGAN

Better Machine Tools

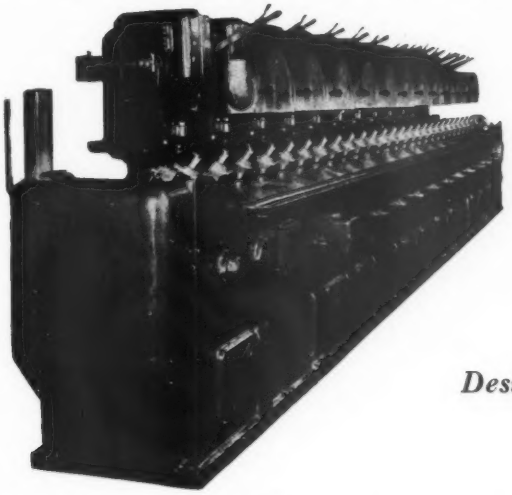
(*Continued from page 17*)

the tool room, although for convenience, the following list of equipment is typical of what might be gainfully employed in a modern tool room equipped for, say, 20 or 25 toolmakers doing a general class of work. Naturally the list might be altered in special circumstances. A glass mold shop, for example, would require more special purpose machines than a jig and fixture shop. However, the list may be helpful both as a standard of comparison and as a guide for any casual reader who may have the problem before him of setting up a new tool room.

One jig borer.
One hydraulic shaper-planer.
One 24-in. heavy-duty universal shaper.
One 12-in. plain shaper.
Two horizontal boring machines with high and low speed spindles or equivalent.
One double-spindle centering machine.
One heavy-duty die making machine.
Two disk grinders.
One small sensitive, single-spindle drill press.
Two No. 1 single-spindle motor-spindle drill presses.
Two 28-in. upright drills.

Multiple Spindle

POLISHING MACHINE



Designed and Built by

THE SOMMER & ADAMS COMPANY

Exceptional facilities for designing and building Special Production Machinery

TOOLS -- JIGS -- FIXTURES

18511 Euclid Avenue CLEVELAND, OHIO

Detroit Representative—John E. Livingstone & Company, 2921 East Grand Boulevard

One 4-ft. radial drill.
One bench filing machine.
One No. 13 universal and tool grinder.
One No. 1½ hand-feed surface grinder.
One No. 2 surface grinder, hand feed.
One hydraulic table drive high-speed surface grinder.
One No. 2 universal cylindrical grinder with internal grinding attachment.
One No. 1 universal cylindrical grinder.
Two wet tool grinders.
One 20-in. engine lathe.
Three 13 x 48-in. lathes.
One 13 x 32-in. lathe.
One 14-in. engine lathe with backing-off attachment.
Two bench lathes, 7 in. x 32 in.
Three No. 2 tool room millers.
One No. 2 Omniversal miller.
Two No. 3A universal millers.
One No. 2A vertical miller.
One bench miller, No. 3 universal.
Three arbor presses.
One 6-in. stroke vertical shaper.
One oxy-acetylene shape cutting machine.
One electric arc welding machine.
Acetylene welding equipment.
One power hack or band saw.
One abrasive cut-off machine.*
One nibbling machine.*
One 36-in. Bullard vertical turret lathe.*
One 2½ x 3½-in. universal turret lathe.*
One No. 3A universal die sinker.
One hand-operated screw press.
Bench centers, surface plates, bench blocks and vises; inspection and tool crib equipment; small bench furnace and heat treat facilities; and press facilities for trying out punches and dies.

*Useful but not essential.

It will be noticed that the list includes a number of machines which might be regarded more properly as production equipment. While the emphasis in this article has been on the importance of providing light, frequently delicate, and always precise equipment for the toolmaker, it should not be forgotten that the first operation in almost any manufacturing problem is roughing out and frequently this involves hogging cuts where high production methods are of course distinctly indicated. Thus the tool room should be provided with milling, turning and grinding equipment, in particular, which will permit stock to be removed with a maximum of speed and efficiency for first and second operation work.

Best Equipment None Too Good for Tool Room

Too often the tool room, especially where it caters only to the needs of its own shop, is the repository of the cast-off equipment for which other departments can find no further use. Many a shop which will spend thousands of dollars on the latest developments in production equipment is more or less niggardly regarding its tool room. This is perhaps natural enough, for many concerns lack a sufficiently steady run of tooling and maintenance work to justify the expense of maintaining a tool-making department equipped with the latest and best in machine tools, only to lie idle half of the year. Unless such a layout is in continuous use, it is indeed a dubious investment. But it is an even poorer investment to spend money on inadequate tools; indeed, no greater mistake could be made. Upon the accuracy and soundness of jigs, fixtures, punches and dies, molds and gages which the tool room produces depends, in the final analysis, the accuracy of the product and the speed with which it can be produced. The alert management of today will do well to consider that charity should begin at home—that its own equipment building department, viz., its tool room, should be equipped with the best and latest machines available. Where this is not economically possible, the wise management will follow the only sensible alternative and that is to eliminate its tool room altogether, except for emergency and simple maintenance work, and turn its tooling problems over to a specialist who is properly equipped for the purpose.

The writer's experience of many years in directing the activities of a concern which has served as toolmakers to the production industries since interchangeable production of precision parts originated, proves beyond peradventure that high standards in tool making can be accomplished and maintained only by the systematic replacement of obsolescent machine tools and accessories. The fine tool shop, by serving a wide list of customers, thus keeping its tool room in constant operation, is enabled to do this very thing—and indeed therein finds its major justification for existence. In no field may it be said more truly that "You can't make a silk purse out of a sow's ear."